

Summary of Bid Evaluation Report

Delmarva Power RFP for Long-Term Power Supplies from New Generation in Delaware

PSC Docket No. 06-241

February 27, 2007

Prepared for:

Delaware Public Service Commission

Delaware Office of Management and Budget

Delaware Energy Office

Delaware Controller General

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Overview

- ◆ RFP for long-term contracts from new generation in Delaware, directed by Delaware Legislature—EURCSA
- ◆ Independent Consultant (IC) retained by four State Agencies to oversee RFP and assist in evaluating bids
- ◆ Delaware Public Service Commission (DPSC) and Delaware Energy Office direct Delmarva Power to issue modified RFP
- ◆ Bids submitted by three bidders—12/21/06-12/22/06
 - Bluewater: 600 MW offshore wind
 - Conectiv: 177 MW combined cycle natural gas
 - NRG: 600 MW coal integrated gasification combined cycle (IGCC)
- ◆ IC issues evaluation report on 2/21/07, as does Delmarva Power

Our Report and Delmarva's

- ◆ Rank order of bids—same, although analyses differed in various respects
 - Conectiv
 - Bluewater
 - NRG
- ◆ Delmarva: all bids should be rejected—all bids are above market
- ◆ IC: no recommendations on bids at this time
 - Additional analysis will be conducted over next five-week period
 - Report due on 4/4/07 regarding the risks and benefits of going forward with one of the bids or not going forward with any of the bids
 - April 4 report will consider bids in relation to alternatives and other matters recommended or considered in IRP process

Bluewater—Project Description

- ◆ A choice of two projects
 - Atlantic North
 - Atlantic South
- ◆ 600 MW offshore wind projects (approx. 7-13 miles off coast)
 - 200 3-MW wind turbines
 - Spread over 30 square miles of surface area
- ◆ For each project:
 - (a) 20 or (b) 25 year PPA
 - (a) 600 MW PPA with 400 MW energy cap, or (b) 400 MW PPA
- ◆ Fixed pricing
 - Energy, UCAP, and portion of project's Renewable Energy Credits (RECs)
 - Level price in constant year \$; escalates at DP&L assumed inflation rate of 2.5% per year

Conectiv—Project Description

- ◆ 177 MW natural gas combined cycle at existing Hay Road site
- ◆ Two commercial proposals
 - Base proposal: Unit contingent sale; DP&L dispatches the project
 - Alternate proposal: Asset backed capacity agreement with firm energy
 - Delmarva determines to buy energy on daily basis at pre-determined price
 - Conectiv determines sourcing of energy
- ◆ Pricing
 - One-time adjustment to one-third of capacity and 100% of on-peak energy based on 5-year futures gas price index
 - After first year, on-peak energy price adjusts annually based on GDPIPD and a coal-based index
- ◆ 10-year term with option to extend for five additional years

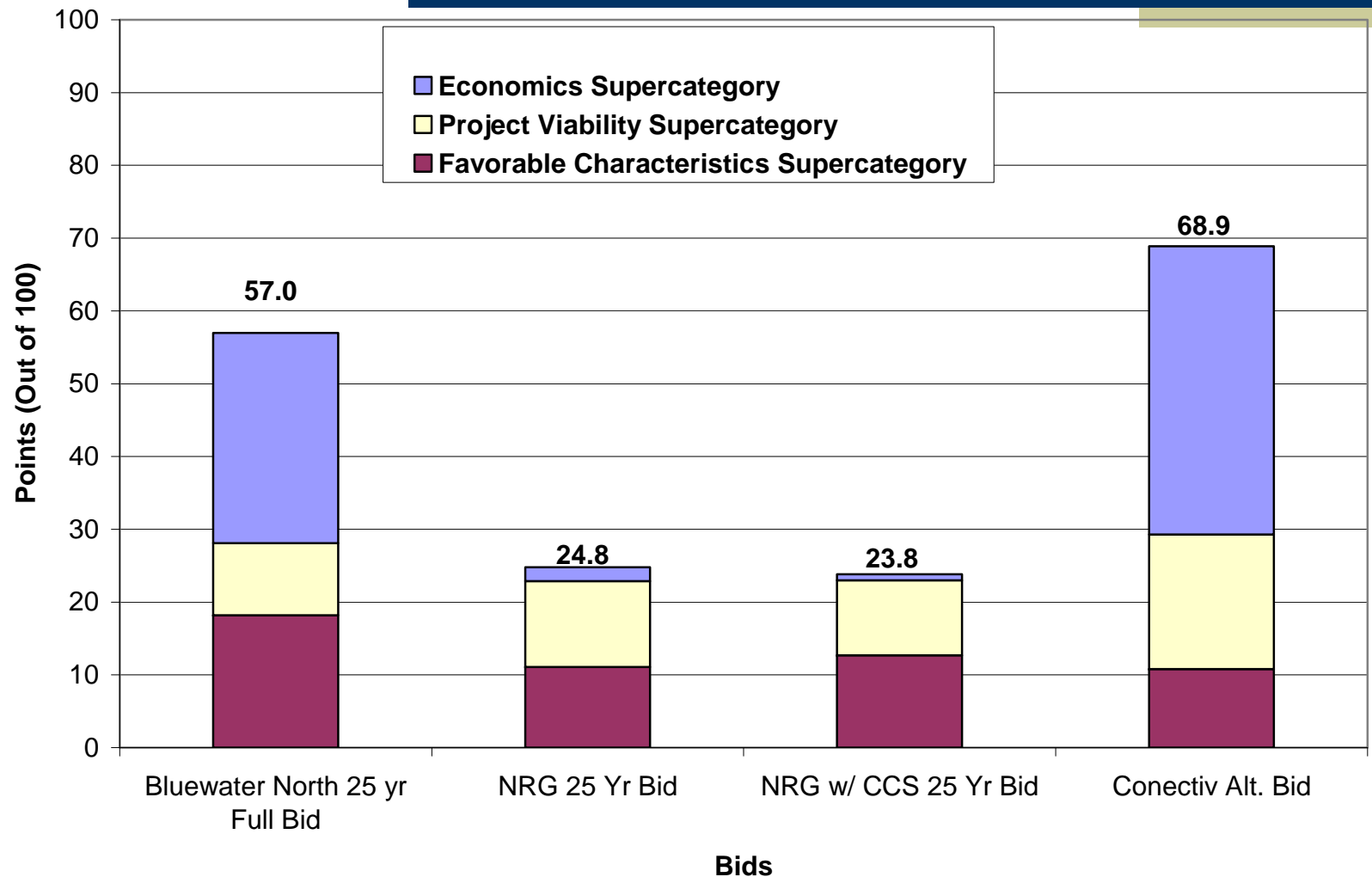
NRG—Project Description

- ◆ 600 MW integrated gasification/combined cycle (IGCC) plant
 - At site of existing Indian River Plant
 - Indian River units 1 and 2 (IR 1&2) would be shut down
- ◆ Commercial proposal
 - 280 MW sold on must take basis
 - 120 MW “virtual turn down”
 - Option to add carbon capture and sequestration (CCS) at additional cost
- ◆ Pricing
 - Capacity payments adjusted annually based on CPI-NE
 - Energy adjusted annually based on CPI-NE and coal-based index
 - CO₂ compliance cost passthrough; allocation of any IR 1&2 allowances
 - Capacity payment for sequestration—passthrough
- ◆ Term: 25 years or 20 years (without CCS)

Economic Evaluation Framework

- ◆ Analysis considers wholesale market price value of energy and capacity associated with SOS service, as affected by bid capacity/energy costs
- ◆ SOS retail rates (currently 11.1 cents/kWh) not comparable to (a) ICF market rate projection (equivalent to 8.1 cents/kWh in 2012) or (b) projected energy and capacity costs inclusive of the bids
 - ICF energy/capacity market rate projection:
 - Does not include retail supplier price premium for full requirements service and volume risk, ancillaries, bad debt risk, RARM
 - Earlier SOS contracts (11.1 cents/kWh) executed when gas prices higher
 - Consistent with declining natural gas futures prices over next five years
 - Bid prices:
 - Load shape/bid energy profile difference; unit (capacity) contingent
 - Analysis is composite of bid prices and market purchases (and sales)

Total Scores by Project



Non-Price Evaluation

Categories and Subcategories	Bluewater North/South	NRG without CCS	NRG with CCS	Conectiv	Max Score
Favorable Characteristics Supercategory	18.2	11.1	12.7	10.8	20.0
i. Environmental Impacts	12.2	6.6	8.2	10.3	14.0
ii. Fuel Diversity	3.0	1.5	1.5	0.5	3.0
iii. Technology Innovation	3.0	3.0	3.0	0.0	3.0
Project Viability Supercategory	9.9	11.8	10.3	18.5	20
iv. Operational Date and Certainty	1.0	0.0	0.0	2.0	3.0
v. Reliability of Technology	1.5	1.0	0.5	2.0	2.0
vi. Site Development	2.4	4.3	4.3	5.0	5.0
vii. Bidder Experience	3.5	3.0	2.5	5.0	5.0
viii. Financeability	1.5	3.5	3.0	4.5	5.0
Total for Non-Price Evaluation	28.1	22.9	23.0	29.3	40.0

Economic Evaluation— SOS Wholesale Costs With Bids

Delmarva/ICF Reference Case Price Scoring

Summary	Market	BW 25 Full	BW 25 Partial	NRG 20	NRG 25	Conectiv Alt Bid
SOS Cost (2005\$/MWh)	\$85.40	\$99.5	\$99.8	\$107.6	\$106.9	\$86.6
Points Scored		4.8	4.0	0.0	0.0	33.0

IC Case Price Scoring

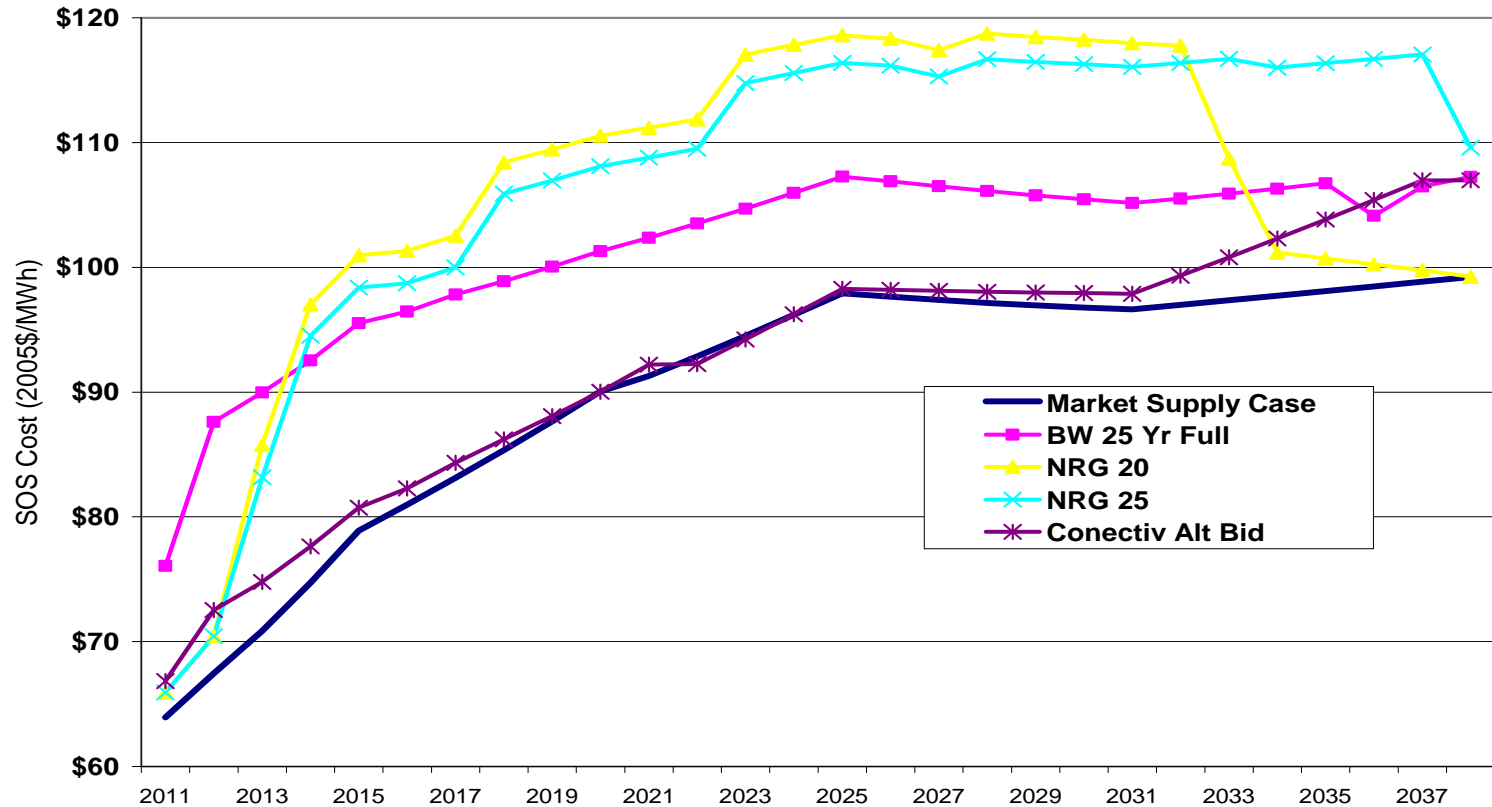
Summary	Market	BW 25 Full	BW 25 Partial	NRG 20	NRG 25	Conectiv Alt Bid
SOS Cost (2005\$/MWh)	\$86.20	\$98.21	\$99.42	\$101.84	\$101.37	\$87.48
Points Scored		8.3	5.6	0.0	1.1	33.0

Economic Analysis—Methodology

- ◆ ICF IPM model used in economic analysis
 - Optimization model
 - Natural gas, coal, transmission models are inputs
- ◆ Metric: \$/MWh SOS costs in 2005\$ levelized for 2011-38
- ◆ Test bid not conducted, but review of inputs, methodology
- ◆ IC applied reasonableness standard in review
 - Constrained by time and Delmarva/ICF control over assumptions/model
 - Sought additional model run based on changes in Delmarva coal and gas transport cost forecast, and use of forward prices in one-time price adjustment for Conectiv bid; used in our report
 - Other adjustments include RECs and imputed debt
- ◆ Additional analysis to be conducted by IC in next report on RFP/IRP relationship

SOS Wholesale Cost Profile Over Time

SOS Cost Profile of Select Bids Relative to Market Prices



Price Stability

- ◆ Price stability tested across reference case and seven other scenarios for each bid
 - Variations of natural gas prices, CO₂ compliance costs, coal prices, and other assumptions
 - Stability measured by taking the standard deviation of the real levelized SOS costs (\$/MWh) across scenarios
- ◆ Bluewater bid was most stable (20 points)
- ◆ Conectiv scored marginally above 0 because marginally more stable than market purchases (although analysis extends 17 years after end of contract)
- ◆ NRG's bids received scores of 0 because they were less stable than market purchases

Economics Supercategory Summary

		Bluewater North 25 yr Full Bid	NRG 25 Yr Bid	Conectiv Alt. Bid	Max Score
Economics Supercategory		28.9	1.9	39.6	60.0
ix.	Price	8.3	1.1	33	33
x.	Price Stability	20.0	0.0	0.7	20
xi.	Exposure	0.25	0.5	5.5	6
xii.	Contract Terms	0.3	0.3	0.4	1

Project Comparisons by Supercategory

Supercategories	Bluewater North 25 yr Full Bid	Bluewater North 25 yr Partial Bid	NRG 25 Yr Bid	NRG w/ CCS 25 Yr Bid	Conectiv Alt. Bid	Max Score
Favorable Characteristics Supercategory	18.2	18.2	11.1	12.7	10.8	20
Project Viability Supercategory	9.9	9.9	11.8	10.3	18.5	20
Economics Supercategory	28.9	19.6	1.9	0.8	39.6	60
Overall Total Scores	57.0	47.7	24.8	23.8	68.9	100.0

Project Comparisons in Supercategory Context

- ◆ Conectiv
 - Best evaluated economics; evaluated as modestly above market
 - Least risk—small size, flexibility, and short term; little price stability
 - Strongest viability (conventional technology); not technologically innovative
- ◆ Bluewater
 - Environmentally superior; provides price stability
 - Expensive: evaluated as \$12-13/MWh real levelized over market
 - Viability: ability to obtain/sell GHG credits as well as RECs, site control?
- ◆ NRG
 - Technologically innovative; potential contribution for GHG control
 - High fixed costs and carbon dioxide compliance cost exposure
 - Large size; uncertainty regarding CCS

Major Contract/Risk Allocation Issues

- ◆ All bids non-conforming in one respect or another
- ◆ Conectiv
 - Second lien, “permitting out,”
 - One-time price adjustment—need for limit or “circuit breaker”
 - Beyond RGGI CO₂ passthrough
- ◆ Bluewater
 - Contract size
 - Amount of security
- ◆ NRG
 - CO₂ passthrough
 - “Financing out”—due to FIN 46 termination or other reason

Conclusion

- ◆ Diversity of proposals highlights tradeoffs between such matters as environmental benefits, technology innovation, reliability, feasibility, cost impact on ratepayers and price stability
- ◆ Ranking of bids based on evaluation conducted:
 - Conectiv
 - Bluewater
 - NRG
- ◆ Additional analysis to be conducted with report due April 4 to provide framework for State Agency decision